

# (12) UK Patent Application (19) GB (11) 2 180 756 (13) A

(43) Application published 8 Apr 1987

(21) Application No 8529621

(22) Date of filing 2 Dec 1985

(30) Priority data

(31) 60/148757

(32) 28 Sep 1985

(33) JP

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(51) INT CL<sup>4</sup>

A61L 15/06

(52) Domestic classification (Edition I):

A5R BA

(56) Documents cited

None

(58) Field of search

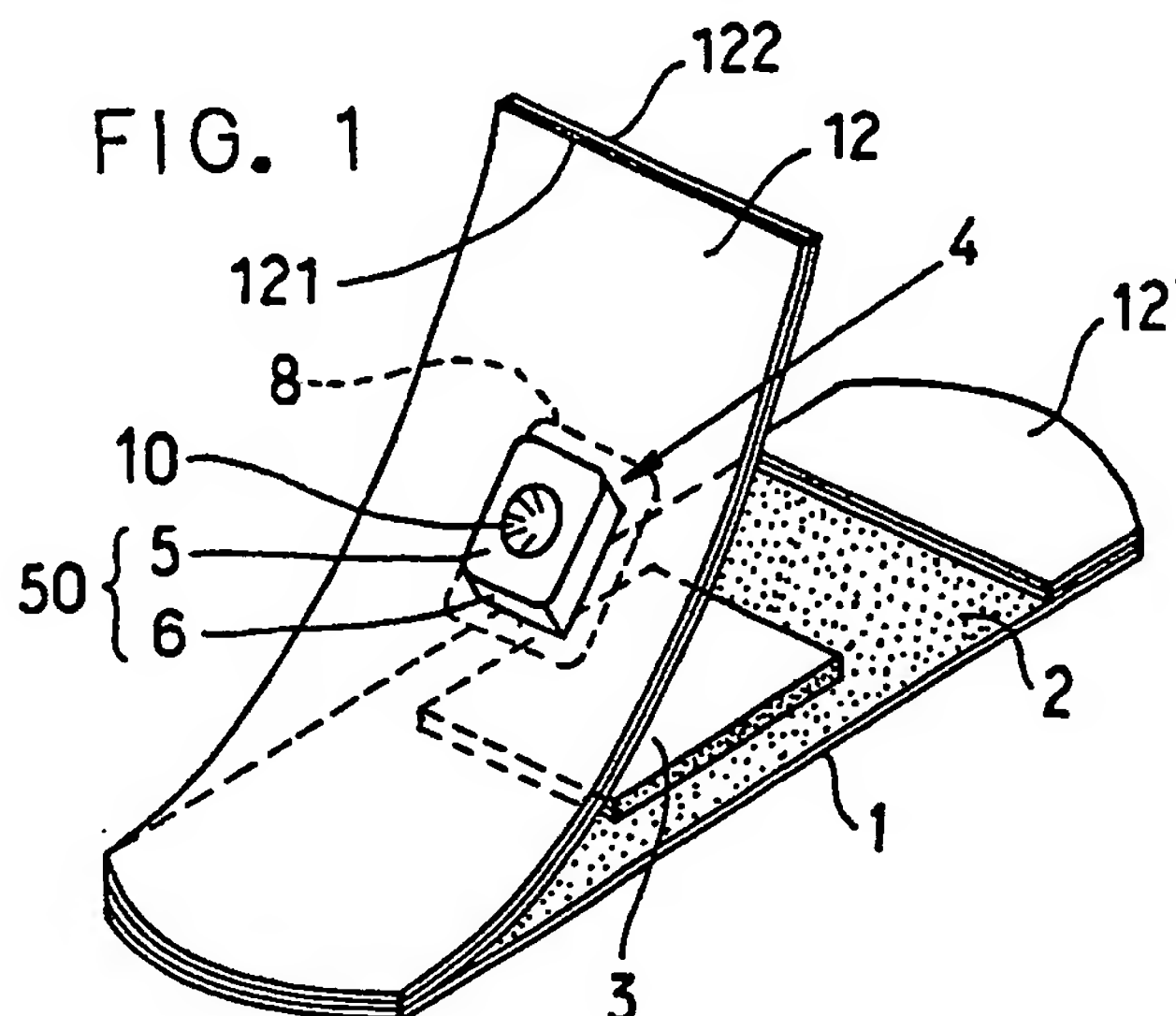
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Selected US specifications from IPC sub-classes A61F

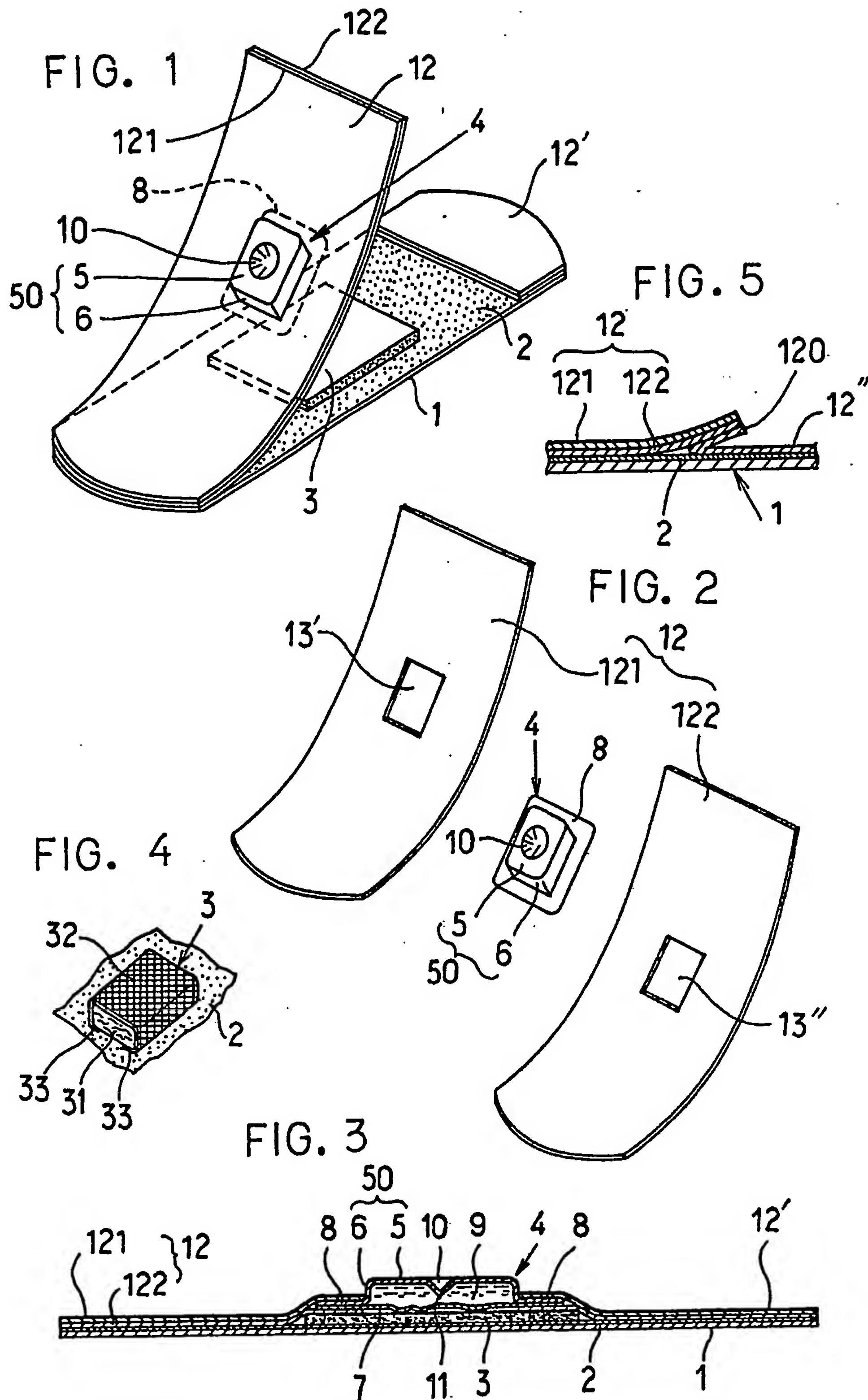
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## (54) First aid adhesive bandage

(57) A-bandage comprises a bandage main body (1) having an adhesive coating (2) on its upper surface, a pad (3) affixed to the upper surface of the main body, a container (4) having a medicinal agent enclosed therein and at least one peel sheet (12, 12') temporarily affixed to the adhesive coating of the main body and holding the container in place on or over the pad, the container (4) including a blister portion (50), a flange (8) extending horizontally outward from the lower end of the blister portion, a bottom wall made of a thin sheet (7) and closing the bottom opening of the blister portion, and a projection (10) extending downward from the central portion of the top wall (5) of the container for rupturing the thin sheet (7) by depressing the top wall (5), the blister portion having the medicinal agent enclosed therein, the projection (10) having a lower end in contact or in proximity to the thin sheet (7), the peel sheet (12, 12') consisting of a lower strip (122) facing the pad (3) and an upper strip (121) superposed on and affixed to the lower strip, the upper strip having an aperture (13') through which the blister portion (50) of the container (4) extends to be exposed on a side opposed to the pad (3), the lower strip (122) having an opening (13'') through which the bottom wall (7) of the container (4) extends to lie on or over the pad, and the flange (8) of the container being interposed between the lower strip (122) and the upper strip (121).



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## SPECIFICATION

### First-aid adhesive bandage

5 This invention relates to an improvement in first-aid adhesive bandages wherein a medicinal agent can be applied to or caused to impregnate a pad when required.

Various first-aid adhesive bandages have  
10 heretofore been provided. For example, adhesive bandages are in wide use which comprise a pad of gauze or the like affixed to the central portion of the adhesive bandage main body and dried after having been impregnated  
15 with a medicinal agent, and peel paper sheets affixed to the main body to cover the pad and separable therefrom when pulled away from each other. However, these bandages have drawbacks. Although the pad contains a medicinal agent, it is in a dry state, so that the  
20 pad is likely to injure the wound and also fails to produce a sterilizing antiseptic effect even when in contact with the wound unless the medicinal agent dissolves out from the pad into the fluid secreted from the wounded portion.

Accordingly first-aid adhesive bandages of another type have been proposed which comprise a container in the form of a capsule or  
30 blister provided on a pad and having a medicinal solution enclosed therein, such that when the capsule or blister is depressed from above for use, an aluminum foil or like thin sheet forming the bottom wall of the capsule or  
35 blister is ruptured by the pressure of medicinal solution to impregnate the pad with the solution. Nevertheless, when the capsule or blister is depressed to apply a pressure to the solution therein, the pressure of the solution ruptures the weakest portion of the thin sheet,  
40 i.e. an outer peripheral portion of the thin sheet where the lower edge of the peripheral wall of the capsule or blister is adhered to the thin sheet. Consequently, the solution is  
45 forced out through this portion over the adhesive surface of the bandage main body or off the surface, failing to properly impregnate the pad for use.

Of first-aid adhesive bandages with a container having medicinal agent enclosed therein, those having a blister portion constituting part of the container and integrally united with a peel sheet suffer the following drawbacks. The container and the peel sheet, which can  
55 not be separately and freely made of different materials in this case, must be produced from a limited range of materials by a limited mode of methods. Moreover, the peel sheet, which can be a thin sheet made of inexpensive materials such as plastics, paper and the like in  
60 separate preparation of the sheet and container, must be prepared from materials which have strength sufficient to hold the medicinal agent and resistance to chemicals for protection from chemical attack by the agent, i.e.

expensive materials.

When a container and a peel sheet are separately made, the container is covered with the peel sheet. With this structure, the bandage has the following problems: (i) the peel  
70 sheet partly lies as greatly separated from the bandage main body and thus can not remain securely affixed to the adhesive coating of the main body, failing to cover the pad in a manner sufficient to keep it clean; (ii) in rupturing the container by depression from above, the container can not be touched directly with the hand and is likely to move loosely under the peel sheet or on the pad, becoming difficult to  
75 properly rupture; and (iii) since with the container so positioned, part of the peel sheet significantly stands out above the bandage main body, making the bandage bulky as a whole; and (iv) when the container is merely  
80 laid as interposed between the peel sheet and the pad, it is difficult to securely hold the container in place on the pad.

It is an object of this invention to provide a first-aid adhesive bandage which comprises a  
90 bandage main body, a pad affixed to the upper surface or adhesive surface of a bandage main body, at least one peel sheet covering the adhesive surface of the main body and a container disposed on or over the pad, the  
95 container having a bottom wall made of a thin sheet, such as aluminum foil, and containing a medicinal agent enclosed therein, such that when the bandage is to be used, the thin sheet of the container can be ruptured to properly apply the medicinal agent to the pad or  
100 cause the agent to impregnate the pad.

It is another object of the invention to provide a first-aid adhesive bandage in which the peel sheet and the container can be separately  
105 prepared from different materials by suitable methods.

It is still another object of the invention to provide a first-aid adhesive bandage in which the container is stably held in place on or  
110 over the pad and in which the peel sheet is securely affixed to the bandage main body to safely protect the pad.

It is a further object of the invention to provide a first-aid adhesive bandage in which the container can be ruptured at its bottom wall by being touched directly with the hand and in which the container will not loosely move over the pad so that proper rupture of the container is assured.

It is a still further object of the invention to provide a first-aid adhesive bandage in which the container remnant is unlikely to remain over the pad or the bandage main body after rupturing the bottom wall of the container and  
120 removing the peel sheet and the container to use the bandage.

It is an additional object of the invention to provide a first-aid adhesive bandage having an appearance which is not rendered bulky by  
125 the container disposed therein.

The objects of this invention can be achieved by a first-aid adhesive bandage comprising a bandage main body having an adhesive coating on its upper surface, a pad affixed to the upper surface of the main body, a container having a medicinal agent enclosed therein and at least one peel sheet temporarily affixed to the adhesive coating of the main body and holding the container in place on or over the pad, the container including a blister portion, a flange extending horizontally outward from the lower end of the blister portion, a bottom wall made of a thin sheet and closing the bottom opening of the blister portion, and a projection extending downward from the central portion of the top wall of the container for rupturing the thin sheet by depressing the top wall, the blister portion having the medicinal agent enclosed therein, the projection having a lower end in contact or in proximity to the thin sheet, the peel sheet consisting of a lower strip facing the pad and an upper strip superposed on and affixed to the lower strip, the upper strip having an aperture through which the blister portion of the container extends to be exposed on a side opposed to the pad, the lower strip having an opening through which the bottom wall of the container extends to lie on or over the pad, and the flange of the container being interposed between the lower strip and the upper strip.

According to this invention, the bottom wall of the container can be ruptured by the projection of the top wall when the container top wall is depressed by a finger toward the pad, whereby the medicinal agent is properly applied to the pad or caused to impregnate the pad.

According to this invention, the peel sheet and the container are not integrally molded and thus can be separately and freely made of different materials. This means that they can be produced from such an extensive range of materials by such a wide variety of methods as to facilitate the production thereof from suitable materials at low costs.

The blister portion of the container is exposed above the peel sheet while the flange of the container is held as interposed between the upper and lower strips of the peel sheet. As a result, the container is stably held in place on or over the pad.

Since the peel sheet does not cover the blister portion of the container and the blister portion is projected above the peel sheet, the peel sheet is not laid greatly away from the main body despite the presence of the container while the peel sheet is kept sufficiently and securely fixed to the adhesive coating of the main body, so that the pad is more safely protected by the peel sheet than otherwise.

Because the blister portion of the container is exposed as protruded above the peel sheet and the flange of the container is firmly sand-

wiched between the upper and lower strips of the peel sheet, the projection for rupturing the thin sheet can be depressed with the container not loosely moved under the peel sheet but fixedly held thereby, permitting the finger to directly touch the container and thus causing the precise rupture of the container.

With the flange securely interposed between the upper and lower strips of the peel sheet, the container, during storage or in rupture of the container bottom, is unlikely to slide from the pad onto the adhesive coating of the bandage main body and adhere thereto, eventually deforming the bandage as a whole or becoming difficult to remove after rupture. The container, which is held by the peel sheet, can be removed together with the peel sheet without fail and with extreme ease, and thus will not be partly left fixed to the main body and/or the pad after evacuation of the contents.

As the blister portion of the container is not covered with the peel sheet but stands out as exposed above the peel sheet, the bandage presents a simple appearance and eliminates the possibility of becoming bulky, despite the presence of the container, compared with a bandage having a container entirely covered with a peel sheet.

The thin sheet rupturing projection can be molded from synthetic resin integrally with the container top wall. Preferably the projection is in the form of an inverted cone or inverted pyramid having a sharp lower (forward) end or inverted frustum, or is semispherical, so as to concentrically act on the thin sheet.

The container top wall may be provided with a substantially flat surface to facilitate the depression of the container top wall. The container can assume a circular, elliptical or like shape. When the pad is rectangular, the container may have a rectangular shape corresponding to the shape of the pad.

The pad may comprise an absorbent material affixed to the upper surface of the bandage main body, and a net covering the absorbent material and entirely or partially held at its outer periphery to the adhesive coating of the main body.

The blister portion of the container may be made of materials selected, for example, from polypropylene, polyethylene and like polyolefines, although depending on the kind of the medicinal agent enclosed in the container. The blister portion may be transparent or semitransparent to see the presence or absence of the medicinal agent from outside.

The above and other objects, features and advantages of the invention will become apparent from the following description of the invention with reference to the accompanying drawings which are given for illustrative purposes only and to which the invention is not limited. In the drawings:

Fig. 1 is a perspective view showing an embodiment of the invention with peel sheets



stripped to some extent;

Fig. 2 is an exploded perspective view showing a combination of the peel sheet and the container in the bandage as shown in Fig.

5 1;

Fig. 3 is a cross sectional view showing the bandage of Fig. 1; and

Fig. 4 is a perspective view showing another example of pad.

10 Fig. 5 is a cross sectional view showing another example of peel sheet.

With reference to Figs. 1 to 3, an embodiment of the invention will be described. Indicated at 1 is an adhesive bandage main body in the form of a rectangular adhesive sheet which is prepared by applying an adhesive 2 to the upper surface of a woven or nonwoven fabric, plastics sheet or the like. A pad 3 of gauze, absorbent cotton or the like is affixed to the central portion of the main body 1 on the upper surface thereof.

A container 4 has a blister portion 50 extending from a top wall 5 to a peripheral wall 6 and made of a plastics film piece. The container 4 has at its lower end an opening which is closed with a thin sheet 7 of aluminum foil or glassine paper as shown in Fig 3. The upper surface of the outer, peripheral portion of the thin sheet 7 is affixed, with a suitable adhesive or by heat sealing, to the lower surface of a flange 8 made of the plastics film and extending horizontally outward from the lower end of the peripheral wall 6. The container 4 has enclosed therein a chemical solution such as a sterilizing antiseptic solution or a medicinal agent 9 such as analgesic, styptic agent, ointment or the like.

The top wall 5 of the container 4 is formed at its center with a downwardly extending projection 10 in the form of an inverted cone, inverted pyramid or the like and having a V-shaped section. The projection 10 has a sharp lower end 11 positioned close to the center of the upper surface of the thin sheet 7 serving as the bottom wall of the container 4.

A pair of peel sheets 12, 12' chiefly made of paper, synthetic resin or the like is temporarily affixed to the surface of the adhesive coating 2 of the bandage main body 1 at its opposite sides.

The peel sheet 12 serves to hold the container 4 in place on or over the pad.

The peel sheet 12 consists of a lower strip 122 facing the pad 3 and an upper strip 121 superposed on and affixed to the lower strip 122, the upper strip 121 having an aperture 13' through which the blister portion 50 of the container 4 extends to be exposed on a side opposed to the pad 3, the lower strip 122 having an opening 13" through which the bottom wall 7 of the container 4 extends to lie on or over the pad, and the flange 8 of the container being interposed between the upper and lower strips 121, 122.

65 When the first-aid adhesive bandage thus

constructed is to be used, the top of the container 4 is depressed to slightly bend the top wall 5 downward, whereby the projection 10 is brought into contact with the thin sheet 7 and ruptures the sheet 7 with its lower end 11 before the pressure on the medicinal agent 9 acts strongly on the sheet 7. The container top wall 5 in this state is further depressed and deformed, forcing out the medicinal agent 9 from the container through the ruptured portion of the sheet 7, whereby the medicinal agent properly spreads from its central portion toward its peripheral portion for application or impregnation. Consequently the medicinal agent 9 can be applied to or caused to impregnate the pad 3 gradually or smoothly without flowing out suddenly or scattering.

When the projection 10 in contact with the thin sheet 7 is depressed, the pad 3 backing the thin sheet 7 is compressed by the pressure at its central portion, permitting the portion of the thin sheet 7 pressed on by the projection 10 to be warped downward, with the result that a tensile force acts concentrically on this portion to easily rupture the sheet. Accordingly the lower end of the projection 10 need not always be sharp-pointed but can be circular arc, inverted trapezoidal or otherwise shaped in section. When the lower end of the projection 10 is thus positioned in contact with or in proximity to the thin sheet 7, the thin sheet 7 can be immediately ruptured by the depression of the projection 10.

The pad 3 is not limited to the type as shown in Figs. 1 and 3 but can be variously formed. For example, a pad of the type as depicted in Fig. 4 comprises an absorbent material 31 such as absorbent cotton, gauze or the like, and a thin flexible net 32 covering the material 31. The net 32 is held at its peripheral portions 33, 33 to the adhesive 2. The net 32 can be made, for example, of polyethylene.

Referring to Fig. 5, a peel sheet 12" may be used in place of the peel sheet 12" affixed to the adhesive coating 2 of the bandage main body illustrated in Figs. 1 and 3. The peel sheet 12" has a folded portion 120 over which the forward end portion of the peel sheet 12 is superposed.

The foregoing is a description of preferred embodiments of the invention, and it will be understood that various modifications may be made without departing from the spirit of the invention or the scope of the appended claims.

#### CLAIMS

1. A first-aid adhesive bandage comprising a bandage main body having an adhesive coating on its upper surface, a pad affixed to the upper surface of the main body, a container having a medicinal agent enclosed therein and at least one peel sheet temporarily affixed to the adhesive coating of the main body and

- holding the container in place on or over the pad, the container including a blister portion, a flange extending horizontally outward from the lower end of the blister portion, a bottom wall
- 5 made of a thin sheet and closing the bottom opening of the blister portion, and a projection extending downward from the central portion of the top wall of the container for rupturing the thin sheet by depressing the top wall, the
- 10 blister portion having the medicinal agent enclosed therein, the projection having a lower end in contact or in proximity to the thin sheet, the peel sheet consisting of a lower strip facing the pad and an upper strip super-
- 15 posed on and affixed to the lower strip, the upper strip having an aperture through which the blister portion of the container extends to be exposed on a side opposed to the pad, the lower strip having an opening through
- 20 which the bottom wall of the container extends to lie on or over the pad, and the flange of the container being interposed between the lower strip and the upper strip.
2. A first-aid adhesive bandage as defined
- 25 in claim 1 wherein the thin sheet rupturing projection is integral with the top wall of the container.
3. A first-aid adhesive bandage as defined in claim 1 or 2 wherein the projection is in
- 30 the form of an inverted cone or pyramid.
4. A first-aid adhesive bandage as defined in any one of claims 1 to 3 wherein the top wall of the container is substantially flat.
5. A first-aid adhesive bandage as defined
- 35 in any one of claims 1 to 4 wherein the container has a rectangular shape.
6. A first-aid adhesive bandage as defined in any one of claims 1 to 5 wherein the blister portion of the container is made of a
- 40 transparent or semitransparent material to see the presence or absence of the medicinal agent enclosed in the container from outside.
7. A first-aid adhesive bandage as defined in any one of claims 1 to 6 wherein the
- 45 blister portion of the container is made of polyolefine.
8. A first-aid adhesive bandage as defined in claim 7 wherein the polyolefine is polyethylene.
- 50 9. A first-aid adhesive bandage as defined in claim 7 wherein the polyolefine is polypropylene.
10. A first-aid adhesive bandage as defined in any one of claims 1 to 9 wherein the pad
- 55 comprises an absorbent material affixed to the upper surface of the bandage main body, and a net covering the absorbent material and entirely or partially held at its outer periphery to the adhesive coating of the main body.
- 60 11. A first-aid adhesive bandage substantially as hereinbefore described with reference to and as illustrated in Figs. 1 to 3, or as modified in accordance with Figs. 4 or 5.

Printed for Her Majesty's Stationery Office  
by Burgess & Son (Abingdon) Ltd, Dd 8991685, 1987.  
Published at The Patent Office, 25 Southampton Buildings,  
London, WC2A 1AY, from which copies may be obtained.